

IN THE CLAIMS

The following listing of claims replaces all prior versions of submitted claims:

Claim 1 (Currently Amended): A ~~stimulator system~~ for tremor control, comprising:  
a stimulator, including,  
a pulse generator for generating digital signal pulses[[:]],  
a digital signal processor connected to said pulse generator for generating an  
approximate sine wave output that is further processed in first and second circuits[[:]],  
and  
at least two pairs of surface electrodes connected to said digital signal  
processor and positioned at predetermined peripheral surface stimulation sites on a  
subject's skin surface[[:]]; and  
at least one neural image,  
wherein said at least two pairs of surface electrodes stimulate the subject's brain, and  
wherein the predetermined peripheral surface stimulation sites are determined based  
at least in part on the at least one neural image.

Claim 2 (Currently Amended): The ~~stimulator system~~ of claim 1, wherein said at  
least two pairs of surface electrodes connected to said digital signal processor produce an  
interferential current output waveform from said first and second circuits.

Claim 3 (Currently Amended): The ~~stimulator system~~ of claim 2, wherein said  
interferential current output waveform includes a base medium frequency of at least 1 KHz  
but no more than 100 KHz.

Claim 4 (Currently Amended): The ~~stimulator~~system of claim 2, wherein said interferential current output waveform includes a resultant beat frequency of no more than 250 Hz.

Claim 5 (Currently Amended): The ~~stimulator~~system of claim 1, wherein said at least two pairs of surface electrodes connected to said digital signal processor are positioned on the subject's skin surface using positron emission tomography and neural imaging devices to identify the peripheral surface stimulation sites.

Claim 6 (Currently Amended): The ~~stimulator~~system of claim 1, wherein said at least two pairs of surface electrodes connected to said digital signal processor are positioned on the subject's skin surface using dermatome maps to identify the peripheral surface stimulation sites.

Claim 7 (Currently Amended): A ~~stimulator~~system for tremor control, comprising:  
a stimulator, including,

a pulse generator for generating digital signal pulses[[]],

a field-programmable gate array connected to said pulse generator for processing the digital signal pulses to approximate a sine-wave output waveform that is further processed in first and second circuits[[]], and

at least two pairs of surface electrodes connected to said field-programmable gate array and positioned at predetermined peripheral surface stimulation sites on a subject's skin surface[[]]; and

at least one neural image,

wherein said at least two pairs of surface electrodes stimulate the subject's brain, and

wherein the predetermined peripheral surface stimulation sites are determined based at least in part on the at least one neural image.

Claim 8 (Currently Amended): The ~~stimulator-system~~ of claim 7, wherein said at least two pairs of surface electrodes connected to said field-programmable gate array produce an interferential current output waveform from said first and second circuits.

Claim 9 (Currently Amended): The ~~stimulator-system~~ of claim 8, wherein said interferential current output waveform includes a base medium frequency of at least 1 KHz but no more than 100 KHz.

Claim 10 (Currently Amended): The ~~stimulator-system~~ of claim 8, wherein said interferential current output waveform includes a resultant beat frequency of no more than 250 Hz.

Claim 11 (Currently Amended): The ~~stimulator-system~~ of claim 7, wherein said at least two pairs of surface electrodes connected to said field-programmable gate array are positioned on the subject's skin surface using positron emission tomography and neural imaging devices to identify the peripheral surface stimulation sites.

Claim 12 (Currently Amended): The ~~stimulator-system~~ of claim 7, wherein said at least two pairs of surface electrodes connected to said field-programmable gate array are positioned on the subject's skin surface using dermatome maps to identify the peripheral surface stimulation sites.

Claim 13 (Currently Amended): A method for electrical stimulation of a subject's brain for treatment of neural disorders, said method comprising:

connecting a pulse generator to a digital signal processor and supplying digital signal pulses to said digital signal processor for producing an approximate sine wave current waveform which is further processed and output to first and second pairs of surface electrodes, wherein first and second circuits are created, respectively; and  
positioning said first and second pairs of surface electrodes at predetermined peripheral surface stimulation sites on the subject's skin surface based at least in part on a neural image.

Claim 14 (Currently Amended): The method according to claim 13, wherein said method further includes creating an interferential current with a base medium frequency of at least  $[[1\text{KHz}]]$  1 KHz but no more than 100 KHz.

Claim 15 (Original): The method according to claim 14, wherein said method further includes creating the interferential current with a resultant beat frequency of no more than 250 Hz.

Claim 16 (Original): The method according to claim 13, wherein said method further includes positioning said first and second pairs of surface electrodes using positron emission tomography and neural imaging devices to locate said peripheral surface stimulation sites.

Claim 17 (Original): The method according to claim 13, wherein said method further includes varying said positioning of said first and second pairs of surface electrodes.

Claim 18 (Original): The method according to claim 13, wherein said method further includes applying said approximate sine wave current waveform to said peripheral surface stimulation sites for at least 30 minutes but no more than 60 minutes.

Claim 19 (Currently Amended): A method for electrical stimulation of a subject's brain for treatment of neural disorders, said method comprising:

connecting a pulse generator to a field-programmable gate array and supplying digital signal pulses to said field-programmable gate array for producing an approximate sine wave current waveform which is further processed and output to first and second pairs of surface electrodes, creating first and second circuits, respectively; and

positioning said first and second pairs of surface electrodes at predetermined peripheral surface stimulation sites on the subject's skin surface based at least in part on a neural image.

Claim 20 (Original): The method according to claim 19, wherein said method further includes creating an interferential current with a base medium frequency of at least 1 KHz but no more than 100 KHz.

Claim 21 (Original): The method according to claim 20, wherein said method further includes creating the interferential current with a resultant beat frequency of no more than 250 Hz.

Claim 22 (Original): The method according to claim 19, wherein said method further includes positioning said first and second pairs of surface electrodes using positron emission tomography and neural imaging devices to locate said peripheral surface stimulation sites.

Claim 23 (Original): The method according to claim 19, wherein said method further includes varying said positioning of said first and second pairs of surface electrodes.

Claim 24 (Original): The method according to claim 19, wherein said method further includes applying said approximate sine wave current waveform to said peripheral surface stimulation sites for at least 10 minutes but no more than 180 minutes.

Claim 25 (Currently Amended): A method for electrical stimulation of a subject's brain for tremor control, said method comprising:

positioning at least two pairs of surface electrodes at predetermined peripheral surface stimulation sites on the subject's skin surface based at least in part on a neural image; and  
supplying electrical stimulation to said at least two pairs of surface electrodes.

Claim 26 (Original): The method according to claim 25, wherein said method further includes supplying electrical stimulation from the group consisting of TENS, neuro-muscular, ultrasound, interferential, PEMF, EMF and mechanical stimulation.

Claim 27 (Currently Amended): A ~~stimulator system~~ system for tremor control, comprising:  
a stimulator, including,

a pulse generator for generating electrical pulses[[:]], and

at least one pair of surface electrodes connected to said pulse generator and  
positioned at predetermined peripheral surface stimulation sites on a subject's skin  
surface[[:]]; and

at least one neural image,

wherein said at least one pair of surface electrodes stimulate the subject's brain, and  
wherein the predetermined peripheral surface stimulation sites are determined based  
at least in part on the at least one neural image.

Claim 28 (Currently Amended): The ~~stimulator~~system of claim 27, wherein said at least one pair of surface electrodes connected to said pulse generator produce a pulsatile current with a square wave output.

Claim 29 (Currently Amended): The ~~stimulator~~system of claim 28, wherein said pulsatile current includes an amplitude range from 0-150 mA and a pulse width of 1-500  $\mu$ sec.

Claim 30 (Currently Amended): The ~~stimulator~~system of claim 27, wherein said pulsatile current includes a frequency range from 1 pps to 2500 pps.

Claim 31 (Currently Amended): The ~~stimulator~~system of claim 27, wherein said at least one pair of surface electrodes connected to said pulse generator are positioned on the subject's skin surface using positron emission tomography and neural imaging devices to identify the peripheral surface stimulation sites.

Claim 32 (Currently Amended): The ~~stimulator~~system of claim 27, wherein said at least one pair of surface electrodes connected to said pulse generator are positioned on the subject's skin surface using dermatome maps to identify the peripheral surface stimulation sites.

Claim 33 (Currently Amended): A method for electrical stimulation of a subject's brain for treatment of neural disorders, said method comprising:

positioning at least one pair of surface electrodes at predetermined peripheral surface stimulation sites on the subject's skin surface based at least in part on a neural image; and  
connecting a pulse generator to said at least one pair of surface electrodes and  
generating an electrical current.

Claim 34 (Original): The method according to claim 33, wherein said method further includes creating a pulsatile current with a with a square wave output, an amplitude range from 0-150 mA and a phase duration range of 1-500  $\mu$ sec.

Claim 35 (Original): The method according to claim 34, wherein said method further includes creating the pulsatile current with a frequency range from 1 pps to 2500 pps.

Claim 36 (Original): The method according to claim 33, wherein said method further includes positioning said at least one pair of surface electrodes using positron emission tomography and neural imaging devices to locate said peripheral surface stimulation sites.

Claim 37 (Original): The method according to claim 33, wherein said method further includes varying said positioning of said at least one pair of surface electrodes.

Claim 38 (Original): The method according to claim 33, wherein said method further includes applying said electrical current to said peripheral surface stimulation sites with a duty cycle from as little as 1 second to 120 minutes on with an off time as little as 1 second to as long as 120 minutes.



Claim 39 (Original): The method according to claim 33, wherein said method further includes applying said electrical current continuously without a duty cycle.

Claim 40 (New): A method for electrical stimulation of a subject's brain for treatment of neural disorders, said method comprising:

connecting a pulse generator to a digital signal processor and supplying digital signal pulses to said digital signal processor for producing an approximate sine wave current waveform which is further processed and output to first and second pairs of surface electrodes, wherein first and second circuits are created, respectively; and

positioning said first and second pairs of surface electrodes at predetermined peripheral surface stimulation sites on the subject's skin surface,

wherein said method further includes positioning said first and second pairs of surface electrodes using positron emission tomography and neural imaging devices to locate said peripheral surface stimulation sites.

Claim 41 (New): A method for electrical stimulation of a subject's brain for treatment of neural disorders, said method comprising:

connecting a pulse generator to a field-programmable gate array and supplying digital signal pulses to said field-programmable gate array for producing an approximate sine wave current waveform which is further processed and output to first and second pairs of surface electrodes, creating first and second circuits, respectively; and

positioning said first and second pairs of surface electrodes at predetermined peripheral surface stimulation sites on the subject's skin surface,

wherein said method further includes positioning said first and second pairs of surface electrodes using positron emission tomography and neural imaging devices to locate said peripheral surface stimulation sites.

Claim 42 (New): A method for electrical stimulation of a subject's brain for treatment of neural disorders, said method comprising:

positioning at least one pair of surface electrodes at predetermined peripheral surface stimulation sites on the subject's skin surface; and

connecting a pulse generator to said at least one pair of surface electrodes and generating an electrical current,

wherein said method further includes positioning said at least one pair of surface electrodes using positron emission tomography and neural imaging devices to locate said peripheral surface stimulation sites.

Claim 43 (New): The system of claim 1, wherein said at least two pairs of surface electrodes stimulate the subject's brain transcutaneously.

Claim 44 (New): The system of claim 1, wherein said at least two pairs of surface electrodes stimulate the subject's brain percutaneously.

Claim 45 (New): The system of claim 7, wherein said at least two pairs of surface electrodes stimulate the subject's brain transcutaneously.

Claim 46 (New): The system of claim 7, wherein said at least two pairs of surface electrodes stimulate the subject's brain percutaneously.

Claim 47 (New): The method of claim 13, wherein said first and second pairs of surface electrodes are configured to provide transcutaneous stimulation.

Claim 48 (New): The method of claim 13, wherein said first and second pairs of surface electrodes are configured to provide percutaneous stimulation.

Claim 49 (New): The method of claim 19, wherein said first and second pairs of surface electrodes are configured to provide transcutaneous stimulation.

Claim 50 (New): The method of claim 19, wherein said first and second pairs of surface electrodes are configured to provide percutaneous stimulation.

Claim 51 (New): The system of claim 27, wherein said at least one pair of surface electrodes stimulates the subject's brain transcutaneously.

Claim 52 (New): The system of claim 27, wherein said at least one pair of surface electrodes stimulates the subject's brain percutaneously.

Claim 53 (New): The method of claim 33, wherein said at least one pair of surface electrodes stimulates the subject's brain transcutaneously.

Claim 54 (New): The method of claim 33, wherein said at least one pair of surface electrodes stimulates the subject's brain percutaneously.